

REMARKS

Preliminary Matters

Claims 1 and 3-11 are all the claims pending in the application.

Claim Rejections - 35 U.S.C. § 103

Claims 1 and 3-11 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Vasudevan et al. (US 6,539,221; hereinafter “Vasudevan”) in view of Bodin et al. (US 5,241,685; hereinafter “Bodin”). Applicant respectfully traverses these grounds of rejection at least in view of the following exemplary comments.

A. Exemplary Features of Claim 1

Claim 1 relates to a method of constructing a representation of the geographical distribution of traffic for a cellular radio network. Claim 1 recites, *inter alia* “dividing each cell of said cellular network into a set of areas using information on outgoing handovers boundaries of a respective cell obtained from incoming handover boundaries obtained from said cellular network.”

In an exemplary non-limiting embodiment a cell is divided into areas using information on the handover boundaries obtained from the cellular network. For example, in order to divide a cell into a set of areas, the entering handover boundaries of the neighboring cells, obtained from the cellular network, is used to build the outgoing handover boundaries of the cell. The outgoing handover boundaries of the cell (derived from the entering handover boundaries of the neighboring cells) are used to divide the cell into areas. It will be appreciated that the foregoing remarks relate to the invention in a general sense, the remarks are not necessarily limitative of

any claims and are intended only to help the Examiner better understand the distinguishing aspects of the claims mentioned further below.

Vasudevan in view of Bodin does not disclose all of claim 1. For example, Vasudevan does not teach the claimed method of constructing a representation of the geographical distribution of traffic for a cellular radio network including dividing each cell of said cellular network into a set of areas using information on outgoing handovers boundaries of a respective cell obtained from said incoming handover boundaries obtained from said cellular network; determining a traffic value for each of said areas, and determining a representation of the geographical distribution of the traffic from said traffic values; and outputting the determined representation, wherein the traffic value of an area depends on an outgoing handover probability from said area to a neighboring cell. Bodin does not cure this deficiency.

B. Applicant's Position

The Examiner alleges that Vasudevan's sectors correspond to the dividing a cell into areas. Applicant respectfully disagrees. Neither Vasudevan's bins nor Vasudevan's sectors can correspond to the recited "areas." Also, dividing a cell into bins and sectors based on the outgoing handover boundaries obtained from incoming boundaries of the neighboring cells obtains from the cell network is not suggested by Vasudevan in view of Bodin.

Bins

As an initial matter, Vasudevan's bins cannot correspond to the recited areas. In Vasudevan's wireless network, the cells are divided into "bins" of a fixed size. For example, these bins can be 100m x 100m (*See* Vasudevan at Fig. 3). The bins are then classified based on

several factors, including handovers boundaries (*See* Vasudevan at 3:11-29) and traffic (*See* Vasudevan at 4:32-53).

However, Vasudevan's cells are not divided into bins "using information on outgoing handovers boundaries of a respective cell obtained from incoming handover boundaries obtained from said cellular network." Instead, the cell is first divided into the fixed bins, and then the bins are merely classified based in-part on handover information. As such, Vasudevan's "bins" cannot correspond to the recited "areas" at least because the cell is not divided into these fixed bins based on handover information but rather only classified after it is divided into bins.

Furthermore, there is no disclosure or suggestion what type of handover information is used to classify the formed bins. That is, Vasudevan does not disclose or even remotely suggest that the bins are classified based on outgoing handover boundaries of the cell which are calculated from incoming handover boundaries, which in turn is obtained from incoming handover boundaries obtained from the cellular network.

Sectors

Moreover, Vasudevan's sectors cannot correspond to the recited areas. Although Vasudevan discloses that the cells of the cellular network can be divided into sectors, there is no disclosure that Vasudevan's cells are divided into sectors "using information on outgoing handovers boundaries of a respective cell obtained from incoming handover boundaries of neighboring cells obtained from said cellular network." *See*, for example, Vasudevan at Fig. 23a-c & 12:36-48.

Also, Vasudevan's reduced "sectors" (i.e., after cell-splitting) cannot correspond to the recited "areas" at least because the geographical distribution of traffic for the cellular network is not determined from traffic values for each of the reduced sectors.

As shown in, for example, Figs. 23a-c of Vasudevan, the size of a cell can be reduced by reducing the transmitting power of a Base Transceiver Station ("BTS"). Vasudevan refers to this reduction of an existing cell size "cell-splitting." In cell-splitting, the transmitted power of a cell site is reduced in order to reduce the traffic of that cell site. *See* Vasudevan at 9:8-17. By reducing the transmitted power, the cell size can be reduced until the cell traffic of the cell is below a maximum traffic threshold value. The amount of reduction of the cell transmission power, and therefore the cell size, needed to reduce the cell traffic below the threshold value are calculated based on traffic information that has been determined based on a precise bin-to-bin mobility estimation algorithm. *See* Vasudevan at 7:19-37.

Although the size of the cell can also be reduced on a sector basis (for example, in Fig. 23c the size of only one of the three cell sectors is reduced), the reduced "sectors" cannot correspond to the recited "areas" at least because the determination of geographical distribution of traffic is not from the traffic values of the reduced sectors. Instead, the distribution of traffic has already been determined based on the geographical distribution of traffic values of the bins. The reduced "sectors" are merely the result of a precise geographical distribution of the traffic values of the bins.

Furthermore, reducing a size of the cell or cell splitting as disclosed in Vasudevan does not disclose or suggest having areas within an existing cell as set forth in claim 1. In Vasudevan,

a sector is a cell or a reduced cell and not a set of areas within a cell. In addition, sectors of Vasudevan are created based on the traffic distribution of the bins and not based on information of the outgoing handover boundaries of this cell.

The Examiner has failed to provide any evidence that would suggest that the outgoing handover boundaries of the cell in Vasudevan must be determined from incoming handover boundaries. In fact, Applicant respectfully submits that the outgoing handover boundaries may be preset and stored in the system as opposed to being determined from the incoming handover boundaries of the neighboring cells. In sum, Vasudevan does not disclose or suggest construing areas based on outgoing handover boundaries of their cell. In Vasudevan, the cells are divided into bins of fixed shape and size, the boundaries of the areas do not stem from boundaries of outgoing handovers of the cell that are themselves derived from boundaries of entering handovers of the neighboring cells. That is, in Vasudevan, the boundaries are geometrically homogenous (bins and sectors) and the boundaries are not data-driven.

Bodin does not cure the above-identified deficiencies of Vasudevan. Bodin is only cited for its alleged disclosure of calculating outgoing handover boundaries from incoming handover boundaries (see pages 3-4 of the Office Action). Accordingly, Bodin does not disclose or suggest dividing the cell into areas based on the calculated outgoing handover boundaries. In addition, Applicant respectfully submits that Bodin does not disclose or suggest calculating outgoing boundaries from the obtained incoming boundaries. That is, Bodin's threshold parameters do not correspond to information on outgoing handover boundaries of a respective cell obtained from said incoming handover boundaries obtained from said cellular network.

The threshold parameters disclosed in Bodin are merely used to determine a handoff between cells. The first threshold (a.k.a. entering threshold) is used to determine if a mobile station whose call is being handled in another cell should be handed off to the cell of interest. The second threshold (a.k.a. staying threshold) is used to determine if a signal strength of a mobile station is sufficient to continue to handle the call from within the cell, or whether the call should be handed off (col. 4, ln. 41-60). Bodin's first and second thresholds are thresholds for a call's signal strength and have nothing to do with information on outgoing handover boundaries obtained from incoming handover boundaries.

That is, Bodin only disclosed the first threshold to determine if the mobile station should be handed off to the current cell and the second threshold to determine if the mobile station in the current cell should be handed off to another cell. These thresholds may be dynamically varied. However, in Bodin, there is no disclosure or suggestion that the first threshold is derived from the second threshold or vice versa. In other words, in Bodin, there is no disclosure or even remote suggestion that one threshold is somehow related to the other threshold. Furthermore, Bodin only discloses that the thresholds are measurements of signal strength and not that they serve as incoming and/or outgoing handover boundaries.

Applicant further respectfully submits that there is no reason to combine the references and none were provided by the Examiner. Bodin only discloses applying the thresholds to determine if the mobile station should enter or exit a cell. Bodin's thresholds are completely unrelated to dividing cells into areas. Furthermore, in Vasudevan the bins and sectors are of fixed size and there is no reason to use thresholds of Bodin to divide alleged cell of Vasudevan.

In fact, the proposed combination is unworkable because the thresholds cannot be used to divide Vasudevan's alleged cell into bins or sectors. In short, one of ordinary skill in the art would not have and could not have combined references in the manner suggested by the Examiner.

For at least these exemplary reasons, independent claim 1 is patentably distinguishable from Vasudevan and Bodin. Claims 3-6, 8, and 11 are patentable at least by virtue of their dependency on claim 1.

Next, independent claims 7 and 10 recite features similar to, although not necessarily coextensive with, the features argued above with respect to claim 1. Therefore, arguments presented with respect to claim 1 are respectfully submitted to apply with equal force here. For at least substantially analogous exemplary reasons, therefore, independent claims 7 and 10 are patentably distinguishable from Vasudevan and Bodin. Claim 9 is patentable at least by virtue of its dependency on claim 7.

Additionally, claim 10 recites "a storage unit storing the determined representation for determining whether corrective measures are needed with respect to allocation of the plurality of base stations to respective cells."

Neither Vasudevan nor Bodin disclose a storage unit. Thus, Applicant respectfully submits that neither Vasudevan nor Bodin teach or suggest "a storage unit storing the determined representation for determining whether corrective measures are needed with respect to allocation of the plurality of base stations to respective cells."

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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